

Application No.: 10/659877

Case No.: 58079US004

Remarks

Claims 1 to 20 are pending. Claim 17 has been withdrawn from consideration. Claims 1, 5, 9, and 18 are amended.

ELECTION/RESTRICTION

Applicants' election of Group I, Claims 1-16 and 18-20 and with Formula (I) as the elected species is hereby acknowledged.

The Applicants take this occasion to reassert their traversal of the restriction requirement, for it appears that the Patent Office may not appreciate the scope of the claims of Group I as restricted.

Claim 1 relates in part to a compound comprising "an amorphous copolymer *including* interpolymerized units derived from one or more perfluorinated ethers of" Formula I or Formula II. (emphasis added)

The Patent Office asserted in its restriction requirement dated April 7, 2005 (Paper #6), that the claims of Group I relate to copolymers made *only* from perfluorinated ethers, while those of Group II further comprise vinylidene fluoride.

The claims of Group I are in fact not, as the Patent Office asserts, restricted to copolymers *only* made from perfluorinated ethers. As emphasized above, the amorphous copolymer *includes* interpolymerized units derived from one or more perfluorinated ethers of Formula I or Formula II. As the MPEP explains at § 2111.03, discussing Transitional Phrases, the transitional phrase "comprising" is synonymous with "including". Including, therefore, is inclusive or open-ended and does not exclude additional, unrecited elements. Therefore, the amorphous copolymers of Group I are generic to and include those of Group II.

With this clarified, the Applicants reassert their position first presented in the Response to Restriction Requirement dated April 26, 2005 (Paper #7), that the "scope of novelty analysis of all the claims of Groups I and II would have to be as rigorous as when only the claims of Group I were being considered by themselves."

Indeed, along these very lines, the Patent Office cites Guerra et al. (U.S. Patent No. 5,384,374) against the claims of Group I in this very Office Action (discussed below). Guerra, in fact, discloses a number of fluorocarbon polymer gums, all containing hydrogen atoms in the

Application No.: 10/659877

Case No.: 58079US004

backbone, many containing vinylidene fluoride. It seems that, despite the Patent Office assertion that searching the prior art relating to Group II would be unduly burdensome, the Patent Office has already undertaken such a search. In light of the foregoing remarks, as well as the fact that the Patent Office has already included prior art relating to Group II in its search, the Applicants submit that there is no sound basis for maintaining the restriction requirement. Accordingly, Applicants herein request that the Restriction Requirement be withdrawn.

In order to comply with 37 CFR 1.144 and MPEP § 821.01, the Applicants have herein designated non-elected claim 17 as withdrawn. The Applicants request rejoinder of this claim, however, in the event that the restriction requirement is withdrawn.

#### OBJECTIONS TO THE SPECIFICATION

The disclosure was objected to because of the following asserted informalities:

- (a) On page 4, lines 10-11, the information regarding the referred-to U.S. Patent Application needs to be updated.
- (b) On page 5, line 22, recitation of "Y(CFZ) q Y" should be changed to "Y(CFZ)<sub>q</sub>Y" without using any space.
- (c) On page 5 at line 21, recitation of "R<sub>2</sub> U" should be changed to "R<sub>2</sub>-U" by using a dash line.
- (d) On page 5 at line 22, recitation of "Y(CF<sub>2</sub>) q Y" should be changed to "Y(CF<sub>2</sub>)<sub>q</sub>Y" without using any space.
- (e) On page 6, line 6, recitation of "di(tbutylperoxy)hexane" should be changed to "di(t-butylperoxy)hexane" in order to be consistent with the same wording used on page 4 at line 33.
- (f) On page 7, line 26, recitation of "n- heptyl" should be changed to "n-heptyl" without using any space.

Objections indicated as (b) and (d) appear to be the same objection. The Applicants ask for clarification from the Patent Office as to the reasoning for this double-inclusion. Nonetheless, the Applicants have made a good faith effort to address these asserted informalities in the amendments to the specification, provided herein. With the entry of these amendments, the

Application No.: 10/659877

Case No.: 58079US004

objections to the specification are overcome. The amendments to the specification submitted above are to correct facially obvious typographical errors. They do not add any new subject matter to the Application. Accordingly, Applicants respectfully request withdrawal of the objections to the specification.

#### CLAIM OBJECTIONS

Claims 1, 5 and 17-19 are objected to because of the following asserted informalities:

(a) For Claim 1-(b) at line 1, Claim 17-(b) at line 1, and Claim 18-(b) at line 1, the Patent Office asserts that a clear and precise rewriting is needed. The Patent Office asserts that the original language may indicate that at least one filler is used that includes at least 10 parts per 100 parts of component (a). Additionally, the Patent Office asserts that the original language may also indicate that such a filler is functionally curable. However, the Patent Office asserts, the fillers shown in Claim 11 are not curable.

(b) For Claim 1-(b) at line 3, Claim 17-(b) at line 3, and Claim 19 at line 2, the Patent Office asserts that all three recitations of "TR-10 of -20°C or less" are not commonly known in the art. The Patent Office suggests it is better to rewrite by using whole name "Retraction at lower temperature" as disclosed on page 20 at lines 9-10.

(c) For Claim 5 at line 3, the Patent Office asserts that the recitation of "R<sub>2</sub> U" should be changed to "R<sub>2</sub>-U" by using a dash line. Otherwise, the Patent Office asserts that it is not clear whether they are connected.

(d) For Claim 5 at line 4, the Patent Office asserts that recitation of "Y(CF<sub>2</sub>)<sub>q</sub> Y" should be changed to "Y(CF<sub>2</sub>)<sub>q</sub>Y" without using any space.

The Applicants have made a good faith effort to address these asserted informalities in the amendments to the claims, provided herein. With respect to objection (a), the Applicants submit that the amendment regarding the amount of inclusion of component (b) clarifies any

Application No.: 10/659877

Case No.: 58079US004

asserted ambiguity. The objection that the original language may also indicate that such a filler is functionally curable, however, is traversed. A plain reading of the claim language indicates that a curable component is included, and that the curable component *includes* a filler. As discussed above, the “including” transitional phrase is synonymous with “comprising” as provided in MPEP § 2111.03. There is no indication in the plain language of the claim that requires the filler to be curable. It is inappropriate for the Patent Office to read such a limitation into claims 1, 17 or 18. When independent claim 1 is considered as written, it is clear that the fact that the fillers recited in claim 11 are not curable is beside the point. There is no requirement that the filler be curable, only that the curable component be curable and that the curable component also includes a filler. Accordingly, the Applicants submit that objection (a) has been overcome in part by amendment, and is inappropriate in part, as indicated in the remarks provided herein. The Applicants respectfully request that objection (a) be withdrawn.

The Applicants also traverse the Patent Office assertion in objection (b) that the recitation of “TR-10 of -20°C or less” would be unclear to one of ordinary skill in the art. As the Patent Office admits, this phrase is clearly described in the specification (the Patent Office makes reference to the abstract at page 20, lines 9-10, the Applicants also draw the Patent Office attention to page 2, lines 14-16). Therefore, any amendment would relate to the stylistic prerogative of the Patent Office, not to any substantive defect in clarity. This is not an appropriate basis for a claim objection. Therefore, the Applicants respectfully request that objection (b) be withdrawn.

With respect to objections (c) and (d), the Applicants have amended claim 5 to provide R<sub>2</sub>-U and to remove the objected-to spacing in Y(CF<sub>2</sub>)<sub>q</sub>Y, to even more clearly indicate the structure of these recited groups. While the Applicants submit that one of ordinary skill in the art would have readily understood the relationship of these groups as originally claimed, the Applicants submit the amendments to claim 5 in order to facilitate prosecution of this application. With these amendments, the Applicants respectfully request withdrawal of objection (c).

Application No.: 10/659877

Case No.: 58079US004

CLAIM REJECTIONS UNDER 35 USC § 102/103(a) AND 103(a)

The Patent Office characterizes the limitations of parent Claim 1 as relating to a compound comprising (a) an amorphous copolymer including interpolymerized monomeric units derived from one or more perfluorinated vinyl ether monomers of Formula I or II, and (b) a curable component including at least one filler having at least 10 parts per 100 parts of component (a), such that upon vulcanization the resulting compound has a Shore A hardness according to ASTM D2240 of 60 or greater, a TR-10 of 25°C or less, and a permeation of 65 (g-mm/m<sup>2</sup>-day) or less. The Patent Office characterizes other parent Claim 18 as relating to a process of making an elastomer from vulcanizing a compound of Claim 1.

*REJECTIONS OVER GROOTAERT*

The Patent Office rejected claims 1-15 and 18-20 35 U.S.C. 102(a) as being anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Grootaert et al. (WO 02/060968 A1, which is equivalent to its US 6,730,760 B2) [hereinafter Grootaert].

Regarding the "curable compound" limitation as disclosed in parent composition Claim 1 and the parent process Claim 18, the Patent Office asserts that Grootaert discloses a method of making a curable fluorinated elastomer composition comprising a fluoroelastomer comprising perfluorovinyl ether having a formula of  $\text{CF}_2=\text{CF}-(\text{O}(\text{CF}_2)_m)_m-(\text{OCF}_2)_x-\text{OR}_f$ . The Patent Office asserts that this disclosure in Grootaert would read on the claimed Formula I when  $m$  is 1. (Citing Grootaert, column 3, line 45 - column 4, line 30; column 3, line 23-39). The Patent Office also asserts that Grootaert's composition includes a mixture of a curative along with its coagent which is curable by peroxide (citing column 8, line 3 column 9, line 16). In addition, the Patent Office asserts that Grootaert further discloses that another type of curable component may be from nitrile- or halogen-containing monomers (citing column 9, line 1-16; column 6, line 64 -column 7, line 31). The Patent Office additionally asserts that Grootaert teaches that conventional filler or additives can be included (citing column 9, line 29-49). The Patent Office observes that Grootaert discloses that some cured samples have a Shore A hardness of 78 from the measurement with ASTM D2240-85 method (citing column 12, line 24; column 11, line 20-22).

Application No.: 10/659877

Case No.: 58079US004

With respect to other claimed properties of the vulcanized product, the Patent Office admits that Grootaert is silent about (A) a TR-10 of  $-25^{\circ}\text{C}$  or less and (B) a permeation of 65 (g-mm/m<sup>2</sup>-day) or less.

To overcome this deficiency in Grootaert, the Patent Office asserts that Grootaert and the present invention recite a "substantially identical curable composition comprising fluorinated copolymers made from a claimed perfluoroalkoxyalkyl vinyl ether and may be polymerized in the same process". Therefore, the Patent Office asserts, a reasonable basis exists to believe that the products of the invention inherently possess the same vulcanized properties with respect to TR-10 and permeation. The Patent Office then concludes that these assertions shift the burden of proof to Applicants to show otherwise. (citing *In re Best*, 195 USPQ 430 (CCPA 1977) and MPEP § 2112-2112.02).

Regarding Claims 2-3 and 8-9, the Patent Office asserts that Grootaert discloses these features at column 5 line 24-29; column 9, line 1-16; column 6, line 64 - column 7, line 31.

Regarding Claim 4, the Patent Office asserts that Grootaert discloses that the liquid hexafluoropropylene monomer can be also included (citing column 5, line 49-53).

Regarding Claims 5-7, the Patent Office asserts that Grootaert discloses that iodine- and bromine-containing monomers are all included and in some cases the bromine atom may be connected directly to the double bond (citing column 9, line 1-16; column 6, line 64 - column 7, line 31).

Regarding Claim 10, the Patent Office asserts that Grootaert describes emulsion polymerization in its working examples.

Regarding Claim 11, the Patent Office asserts that all the conventional fillers or additives can be included according to Grootaert (citing column 9, line 29-49).

Regarding Claims 12-13, the Patent Office asserts that Grootaert discloses including some acid acceptors such as calcium hydroxide and the like (citing column 9, line 50-60).

Regarding Claim 14, the Patent Office asserts that since Grootaert teaches that a cure site monomer or a diiodine compound can be incorporated in the copolymer for crosslinking purpose, the final cured product would carry the claimed or similar mechanical properties due to the presence of reactive sites in the copolymers. The Patent Office does not cite any support for this assertion.

Application No.: 10/659877

Case No.: 58079US004

Regarding Claim 15, the Patent Office asserts that Grootaert teaches components that are peroxide curable (citing column 8, line 3 column 9, line 16).

The Patent Office characterizes other parent Claim 18 as relating to the process of making an elastomer from vulcanizing a compound of Claim 1. The Patent Office then rejects remaining Claim 18-20 citing the same reasons for the above rejections of Claims 1-15. No additional arguments are presented.

#### *REJECTION OVER GROOTAERT IN VIEW OF GUERRA*

Claim 16 was rejected under 35 U.S.C. 103(a) as being unpatentable over Grootaert in view of Guerra et al. (US 5,384,374) [hereinafter Guerra].

The Patent Office incorporates by reference the discussion of the disclosures of the prior art of Grootaert for Claims 1-15 and 18-20. Regarding Claim 16, the Patent Office admits that Grootaert is silent about using a bisphenol curable compound. The Patent Office asserts, however, that Guerra teaches that when curing a fluorocarbon elastomer mixture containing fluorinated ether composition, either a bisphenol curing system or a peroxide cure system can be used (citing Guerra, column 5, line 3-60; column 4, line 17-27).

The Patent Office asserts that this disclosure in Guerra renders bisphenol curing systems functionally equivalent and interchangeable with a peroxide cure system. The Patent Office asserts that, in light of the fact that both of the references make the same type of curable fluorinated elastomer containing similar or the same vinyl ether units, one having ordinary skill in the art would have found it obvious to replace Grootaert's peroxide curing system with bisphenol system as taught by Guerra. The Patent Office asserts that one would expect the same success in both instances. Additionally, the Patent Office asserts that there would be an advantage in that such a replacement would obtain excellent low-temperature flexibility while retaining the desired physical properties.

#### RESPONSE TO CLAIM REJECTIONS

According to the MPEP, "[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." See MPEP 2131 (quoting *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d

Application No.: 10/659877

Case No.: 58079US004

628, 631) (emphasis added). Furthermore, “[t]o establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.” See MPEP 2143 (emphasis added).

#### *REJECTIONS OVER GROOTAERT*

With respect to the properties described in claim 1 relating to a vulcanized product, the Patent Office admits that Grootaert is silent about (A) a TR-10 of -25°C or less and (B) a permeation of 65 (g-mm/m<sup>2</sup>-day) or less. Additionally, the Patent Office has not shown where Grootaert discusses “an *amorphous* copolymer including interpolymerized units derived from one or more perfluorinated ethers of” Formula I or Formula II. Based on these shortcomings of Grootaert, the Patent Office has failed to meet the basic criteria for showing anticipation under 102(a) and obviousness under 103(a). Both 102(a) and 103(a) require that the prior art describe each and every element of a claim, which the Patent Office admits that Grootaert does not (and the Applicants have shown yet another aspect in which Grootaert does not, that is, the teaching of an amorphous copolymer). Accordingly, the Applicants submit that the rejection of claim 1 is inappropriate and request that it be withdrawn.

To overcome this deficiency in Grootaert, however, the Patent Office asserts that Grootaert and the present invention recite a “substantially identical curable composition comprising fluorinated copolymers made from a claimed perfluoroalkoxyalkyl vinyl ether and may be polymerized in the same process”. Therefore, the Patent Office asserts, a reasonable basis exists to believe that the products of the invention inherently possess the same vulcanized properties with respect to TR-10 and permeation. The Patent Office then concludes that these assertions shift the burden of proof to Applicants to show otherwise. (citing *In re Best*, 195 USPQ 430 (CCPA 1977) and MPEP § 2112-2112.02).

First, the Patent Office fails to cite a reference for the presumption that a “substantially identical curable composition” will inherently possess the same vulcanized properties. The Patent Office does not define what it means by “substantially identical”, nor does it specify how substantial the identity must be to give a reasonable basis to expect the same inherent properties.



Application No.: 10/659877

Case No.: 58079US004

If the Patent Office is relying on the knowledge of one of ordinary skill in the art, it must show that such knowledge is actually possessed in the art. Therefore, Applicants respectfully ask that the Patent Office provide some source for this unsupported assertion, which may be in the form of an affidavit of personal knowledge, as required by 37 CFR § 1.104(d)(2) ("When a rejection in an application is based on facts within the personal knowledge of an employee of the Office, the data shall be as specific as possible, and the reference must be supported, when called for by the applicant, by the affidavit of such employee, and such affidavit shall be subject to contradiction or explanation by the affidavits of the applicant and other persons.") The Patent Office bare assertion of inherency under a non-defined "substantially identical" standard is improper.

Even if the Patent Office has provided arguments sufficient to shift the burden of proof to the Applicants, the Applicants have shown that Grootaert does not inherently anticipate or render obvious claim 1. The Applicants have provided this proof in the Examples and Comparative Examples of the present application. Particularly, the Applicants have presented the surprising results that not all levels of conventional additives give a compound having "a Shore A hardness according to ASTM D2240 of 60 or greater, a TR-10 of  $-25^{\circ}\text{C}$  or less, and a permeation rate of 65 (g-mm/m<sup>2</sup>-day) or less" as required by claim 1.

The Applicants draw the Patent Office attention to Example 2 and Comparative Examples C1 and C2. These compositions all employ an amorphous fluoropolymer described as LTFE-1. Even if the Patent Office can show that Grootaert somehow suggests amorphous fluoropolymers, which the Patent Office has failed to do, and even if Grootaert does suggest the use of conventional fillers generally, this comparison provided in the present application examples illustrates the surprising results captured in the present claims. Example 2 and Comparative Examples C1 and C2 are identical except for the level of carbon black filler used. Despite this similarity, which the Patent Office asserts must lead to inherently identical properties, Example 2 shows a Shore A hardness of 71, a TR-10 of  $-39^{\circ}\text{C}$ , and a permeation rate of 63 (g-mm/m<sup>2</sup>-day) or less, all within the limitations of claim 1. Comparative Examples C1 and C2, on the other hand, respectively show a Shore A hardness of 55 and 59, a TR-10 of  $-40$  and  $-40$ , and a permeation rate of 89 and 89. The Applicants have shown, as demonstrated in these comparative examples, that even if Grootaert teaches the fluoropolymer of the present claims (which Applicants do not admit), inclusion of such a fluoropolymer in a curable composition does not automatically lead to the composition of claim 1. Therefore, the Applicants have

Application No.: 10/659877

Case No.: 58079US004

rebutted the Patent Office assertion that such properties, not described in Grootaert, must exist in the compositions described in Grootaert.

Regarding claims 2–15, which ultimately depend from claim 1 and add patentable features thereto, when claim 1 is found to be patentable over Grootaert, claims 2–15 must also be found patentable over Grootaert.

The Patent Office characterizes other parent claim 18 as relating to the process of making an elastomer from vulcanizing a compound of claim 1. The Patent Office then rejects remaining claim 18–20 for the same reasons given above for the rejections of claims 1–15. No additional arguments are presented. Thus, the Applicants submit that when claim 1 is found patentable over Grootaert, claims 18–20 must also be found patentable for the same reasons provided above with respect to claim 1. Accordingly, the Applicants respectfully submit that the rejection of claims 1–15 and 18–20 as unpatentable over Grootaert is inappropriate and kindly request that it be withdrawn.

#### *REJECTION OVER GROOTAERT IN VIEW OF GUERRA*

The Patent Office incorporates by reference the discussion of the disclosures of the prior art of Grootaert for Claims 1–15 and 18–20. Regarding Claim 16, the Patent Office admits that Grootaert is silent about using a bisphenol curable compound. The Patent Office asserts, however, that Guerra teaches that when curing a fluorocarbon elastomer mixture containing fluorinated ether composition, either a bisphenol curing system or a peroxide cure system can be used (citing Guerra, column 5, line 3–60; column 4, line 17–27).

Guerra does not overcome the shortcomings of Grootaert with respect to claim 1, as explained above. The Patent Office has not shown where Grootaert teaches, suggests or describes all of the limitations of parent claim 1. Furthermore, the Applicants have rebutted the Patent Office assertion that the disclosed compositions of Grootaert must inherently possess all of the claim limitations of parent claim 1. The Patent Office has not shown where Guerra overcomes this failure of Grootaert to teach, suggest or describe parent claim 1.

Claim 16 depends from claim 1 and adds patentable features thereto. Therefore, the Applicants submit that when claim 1 is found patentable over Grootaert, claim 16 must likewise be found patentable over Grootaert in view of Guerra.

Application No.: 10/659877

Case No.: 58079US004

Based upon the Patent Office admissions and the remarks presented above, the Applicants respectfully submit that the rejection of claim 16 over Grootaert in view of Guerra is inappropriate and kindly request that this rejection be withdrawn.

CONCLUSION

The Applicants acknowledge that the prior art made of record and not relied upon is considered by the Patent Office to be pertinent to applicants' disclosure. The Patent Office admits that US Patent No. 6,191,208 B1 to Takahashi et al. fails to teach or fairly suggest the limitations of present claims. Applicants acknowledge these shortcomings of Takahashi.

In view of the above, it is submitted that the application is in condition for allowance. Reconsideration of the application is requested.

Allowance of claims 1-16 and 18-20, as amended, at an early date is solicited. Rejoinder of claim 17 is also respectfully requested.

Respectfully submitted,

September 15, 2005

Date

By: 

Brian E. Szymanski Rég. No.: 39,523

Telephone No.: 651-737-9138

Office of Intellectual Property Counsel  
3M Innovative Properties Company  
Facsimile No.: 651-736-3833